Health Management Information Systems Meeting for PEPFAR Partners

November 30, 2005

Today's Presentation

I. **Introduction**

II. **The BroadReach PEPFAR South Africa ARV Treatment Programme**

III. **The ARVCare HMIS System**

I. Who We Are

- **BroadReach Healthcare**

  - Experience and expertise in healthcare delivery system development and management, with particular expertise in ART program implementation including experience in managing the rollout of the Botswana MASA program

  - Currently involved in PEPFAR ARV programs in South Africa, Ethiopia, the Caribbean and Vietnam

  - Supported the development of national and international ART implementation plans for China, South Africa, Botswana, UNICEF, etc

- **Aid for AIDS**

  - Largest and most experienced HIV/AIDS ART management company in Africa

  - Unique and innovative disease management system provides access to real time clinical decision support, adherence management, patient level data collection and analysis, etc through a fully operational remote monitoring center

  - Over 7 years experience in developing, implementing, and managing ART programs in over 7 African countries – 30,000 HIV/AIDS patients enrolled to date with over 17,000 being managed on ARV

  - Manage ART programs for South African Government, Debswana, British Petroleum, DaimlerChrysler, DeBeers,

I. Introduction to ARVCare

- ARVCare: a joint venture between BroadReach Healthcare and Aid for AIDS

  » combining BroadReach's expertise in large-scale public sector ART program implementation with the largest private sector ART program in Africa

- ARVCare Approach:

  » *Rapid and Sustainable Scalability*

  » *Consistency of Clinical Outcomes*

  » Support and development of new innovative models for harnessing the existing capacity of both private sector and faith-based healthcare delivery infrastructure

To provide access to life-saving ARV's to as many people as possible using a rapidly scaleable model that delivers consistent quality in many sites across the country

II. BroadReach PEPFAR South African ARV Treatment Program

Supply: Healthcare Providers

⟷

Demand: PLWHA Networks

- ARVCare Disease Management Platform (AfA/BroadReach)
- Private Doctor Network of ~4500 GP's Across South Africa
- National Network of Private Laboratories
- National Mail-Order Pharmacy System

- Selected PLWHA Support Groups, Home-based Care Networks, etc. across 5 provinces in South Africa

II. BroadReach PEPFAR South African ARV Treatment Program

Summary of Accomplishments Since June 2005

- 35 treatment sites have been established in 8 communities across 3 provinces in the country (KwaZulu-Natal, Mpumalanga, North West Province)

- In the span of 5 months during the start-up phase, over 1000 patients were educated with over 600 patients initiated on ARV's

- Over 200 facilitators educated in train-the-trainer sessions for treatment literacy and adherence support

- Program has capacity to treat over 100,000 patients without any additions in infrastructure

III. The ARVCare HMIS System – Key Obstacles It Overcomes

<u>Obstacle:</u> How can we train enough caregivers in HIV/AIDS and ART management to handle the patient demand?

> *Our Approach: Rapid didactic training followed by real-time practical training of caregivers through remote clinical decision support*
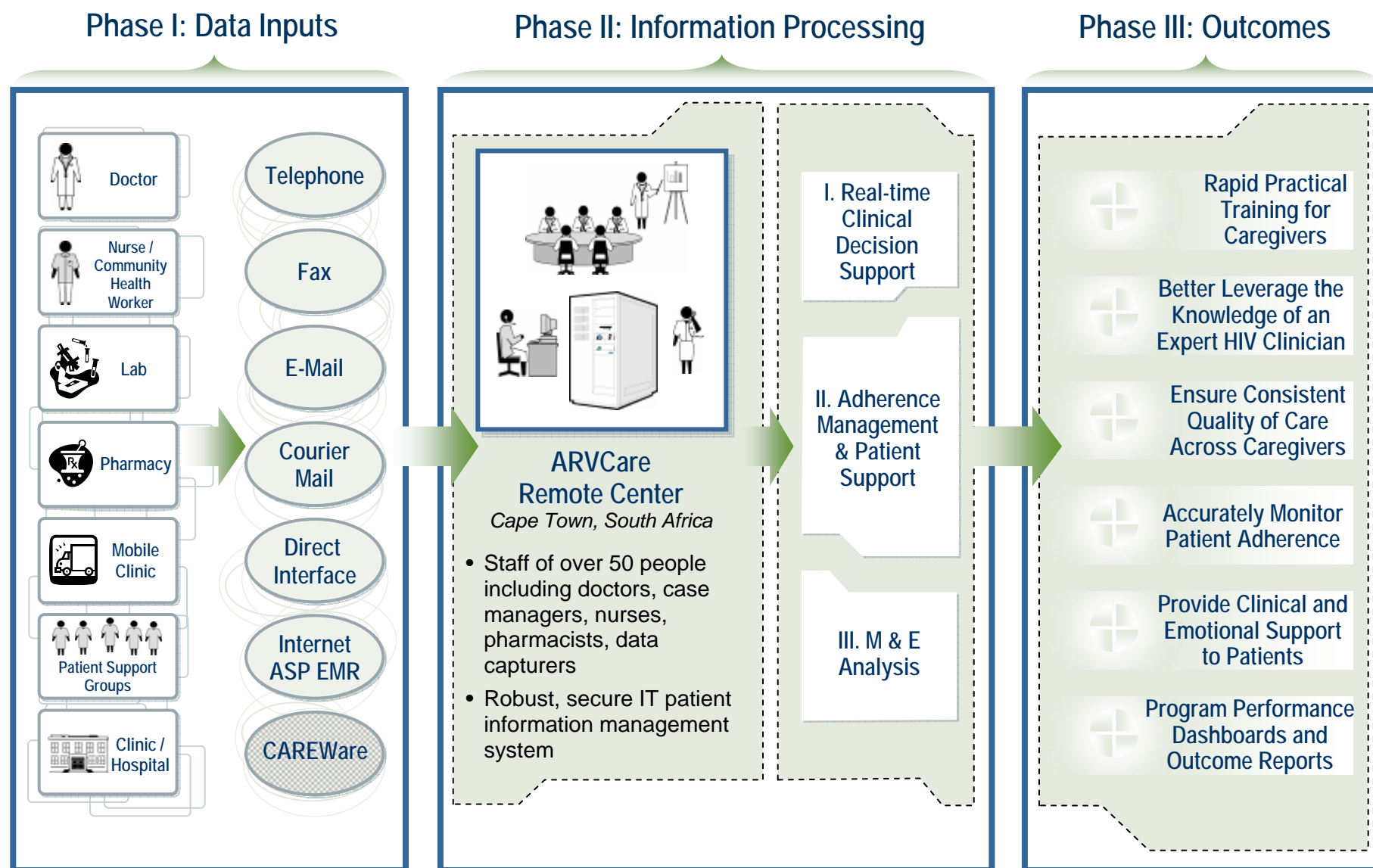
<u>Obstacle:</u> With such a large number of geographically decentralized caregivers – and with caregivers of widely differing levels of sophistication/training - how can we ensure consistent high quality care?

> *Our Approach: Development of a flexible patient data tracking system that is practical for Africa, then using the data to provide real-time case management support for caregivers*

<u>Obstacle:</u> With such a large number of patients, how can we help to ensure patient adherence to prescribed drug regimens?

> *Our Approach: Staffed call center to answer patient clinical questions and address emotional needs, plus adherence monitoring through medication and lab tracking*

III. The ARVCare HMIS System – Framework

Phase I: Data Inputs

Data Sources:
- Doctor
- Nurse / Community Health Worker
- Lab
- Pharmacy
- Mobile Clinic
- Patient Support Groups
- Clinic / Hospital

Transmission Methods:
- Telephone
- Fax
- E-Mail
- Courier Mail
- Direct Interface
- Internet ASP EMR
- CAREWare

Phase II: Information Processing

ARVCare Remote Center
Cape Town, South Africa

- Staff of over 50 people including doctors, case managers, nurses, pharmacists, data capturers
- Robust, secure IT patient information management system

I. Real-time Clinical Decision Support

II. Adherence Management & Patient Support

III. M & E Analysis

Phase III: Outcomes

- Rapid Practical Training for Caregivers
- Better Leverage the Knowledge of an Expert HIV Clinician
- Ensure Consistent Quality of Care Across Caregivers
- Accurately Monitor Patient Adherence
- Provide Clinical and Emotional Support to Patients
- Program Performance Dashboards and Outcome Reports

AfA *Aid for AIDS*

BroadReach *healthcare*

Objective: Process patient level data into useful information to be sent back to caregivers in the field to provide real-time training and support, and to ensure high quality and consistent levels of care

Difficult Case Reviews:
Weekly review of outlier cases
by a panel of expert HIV/AIDS clinicians

Case Management System: HIV/AIDS case managers review incoming patient data and are supported by an electronic rules-based decision support system to help flag and identify outliers

Caregiver Telephone Support Call Center: Logs approximately 200 inbound/outbound calls per day with caregivers (doctors, nurses, pharmacists, health workers, etc) answering clinical questions

"Real-Time Training and Decision Support"

Caregiver Education Program: High impact, time efficient Internet and didactic courses taught by leading HIV/AIDS clinicians

"Foundation"

Description of the Case Management System

- Electronic Decision Support Processing Engine has two components:
  - Clinical rules
  - Operational rules

- Currently there are 177 clinical rules

- On average, 120 steps are processed per file

- Average processing time is 300 milliseconds per file

- Complements and extends the knowledge and capacity of a single case manager to provide support to a large number of patients

III. The ARVCare HMIS System – Benefit #2 Adherence/Patient Support

Objective: Provide education and support services in combination with adherence monitoring to ensure highest levels of clinical outcomes

Adherence Interventions:
Case managers contact caregivers and patients

Adherence Monitoring: System monitors medication pick-ups, CD4 and viral load levels, and missed doctor visits to flag potential adherence problem cases, or to flag viral resistance and 2nd line therapy notifications

Patient Telephone Counseling Center: Confidential toll-free call center staffed by trained HIV/AIDS counselors (many are PLWHA's) to provide education, psychosocial and adherence support
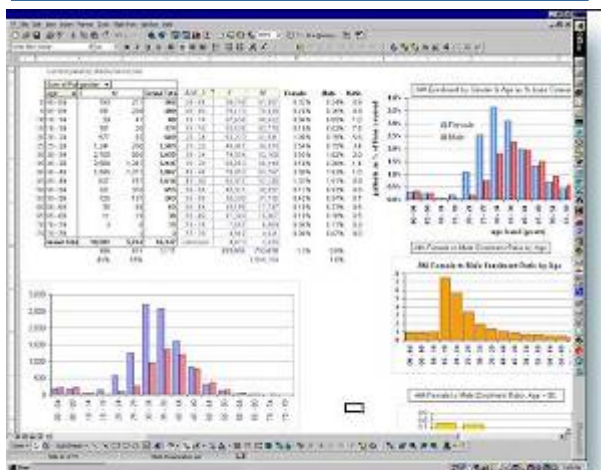
Patient Education Program: Customized programs, tools, and written collateral to encourage awareness, promote uptake, enable treatment literacy, and cultivate behavior change
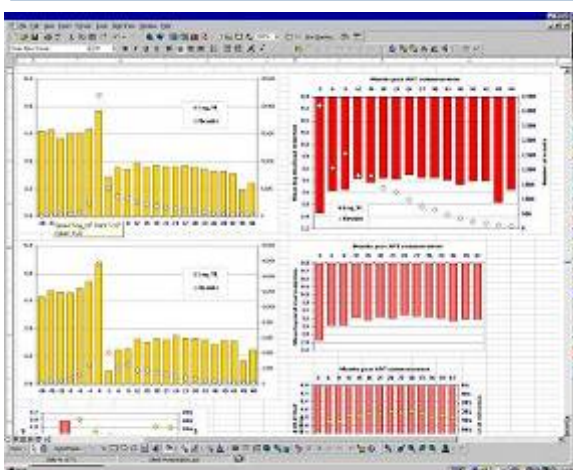
Monitoring & Intervention

Support Services

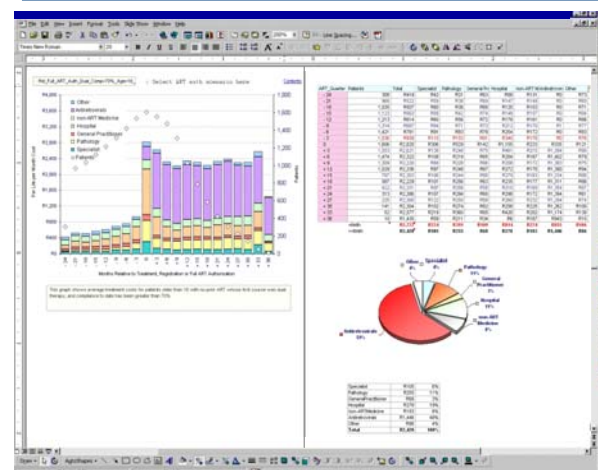# III. The ARVCare HMIS System – Benefit #3 M&E Reporting

Tracking Program Enrollment

Tracking CD4 and Viral Load
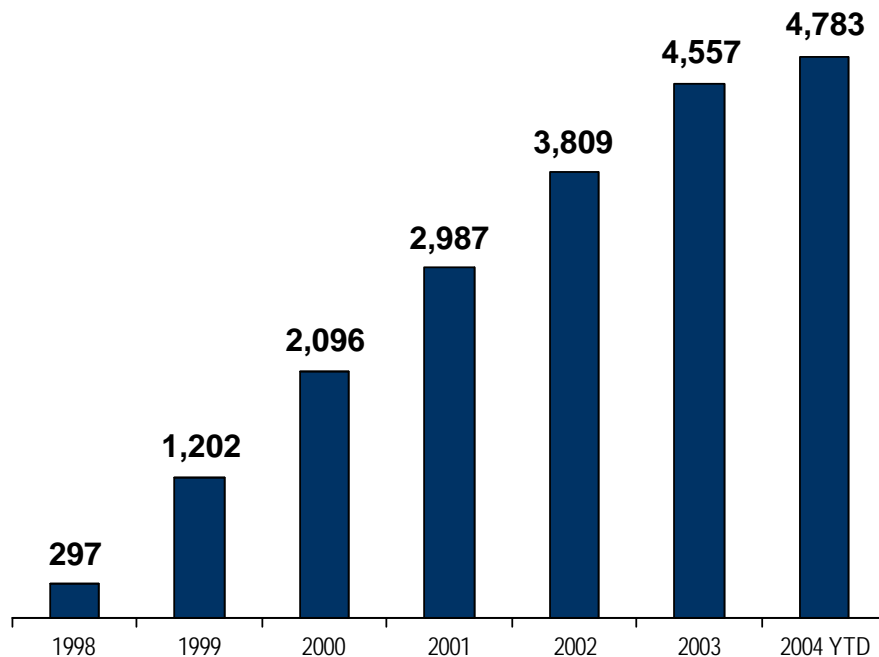

Tracking Program Costs

Examples of Indicators

- **Patient Demographic Data**
  - Number enrolled
  - Gender
  - Geographic Location

- **Clinical Data**
  - Adherence rates
  - Survival rates
  - CD4, Viral Load, CBC, LFT's

- **Cost Data**
  - Drug costs
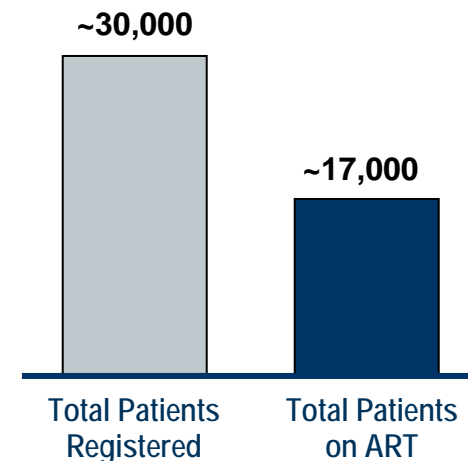 - Provider costs
  - Laboratory Costs

III. The ARVCare HMIS System – Results of the AfA Program

- Largest HAART program in Africa (~17,000 on ARV)
- Large network of doctors (~5000)
- Operating in seven countries (South Africa, Botswana, Swaziland, Namibia, Mozambique, Tanzania, Kenya)

Total Doctors Registered

Year	Value
1998	297
1999	1,202
2000	2,096
2001	2,987
2002	3,809
2003	4,557
2004 YTD	4,783

Patient Enrollment

	Value
Total Patients Registered	~30,000
Total Patients on ART	~17,000

Mortality Comparison to Developed Countries

24 month survival (%) (y-axis: 0% to 100%)

Legend:
- British Columbia Drug Treatment Programme
- Aid for AIDS programme
- Centers for Disease Control USA

CD4 count (cells/µL) at HAART commencement (x-axis: 200 – 349, 50 – 199, 0 – 49)
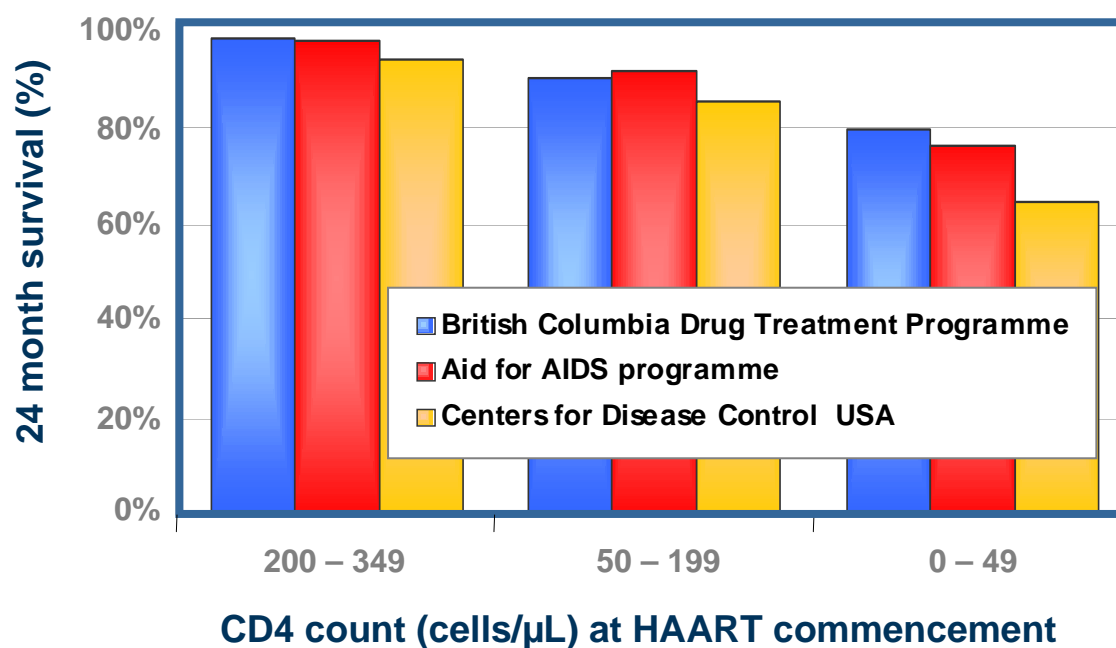
n = ~30,000

Sources: Chan K *et al* 2002 AIDS 16(12), Hogg R *et al* 2001 JAMA 286(20), AfA Database.

III. The ARVCare HMIS System – Summary of Benefits

- **Flexible:** Can accommodate paper-based systems to advanced computer systems at the doctor's clinic without any additional staffing

- **Ensures Quality of Care:** Provides real-time support and quality control over a large geographic region

- **Patient Support:** Provides real-time support to patient adherence and psychosocial counseling issues

- **Operational Management:** Provides daily reports on issues in the field for follow-up

- **Monitoring & Evaluation:** Provides real-time feedback on program metrics

View currently authorised script (and history)

Capture Medicine Collection for a patient

Search for applicants based on reference number only

Search for applicants based on Surname etc.

Access the Case Review functions

Indicate a Doctor for an 0199 payment

Creates a new followup

Add new investigation answers

Change priority of application

Add therapy

Authorise medication for a patient

Record new counselling contacts and view existing ones

                  Create a new event

View claims history data for an applicant

Record new interventionist contacts and view existing ones

Associate a Doctor with an application

Edit demographic details for an application

                  Edit the demographic details of a doctor

                  Change the status of a doctor (main or other)

                  Edit existing followup

Review and/or cancel automated electronic screening activity

                  Add notes and edit notes created in last 2 days

                  Display notes on the Summary screen

Notes added to files get passed on to the Internet New stage

Drugs added to files get passed on to the Internet New stage

Check AfA biographic details against PULSE details

Capture manual validation of pharmacy request

Add, Modify, Delete therapy for a patient

                  Add and edit local membership on lookupafa..t_nonmxmbens

                  Perform various maintenance functions

                  Capture new Doctor in master file

Capture a load error notification

Log patient consent forms

                  Edit directions

Edit demographic details for providers in the doctor file

Edit medical aid / employee numbers

                  Edit drug directions and price and discontinue drug

ON

TION

ration

,

e

Mine

Mine

on

al

investigation		Results
	23 Sep 2005 ▼	
	23 Sep 2005	dd MMM yyyy
	08 Apr 2003 [del]	dd MMM yyyy
	No ▼ [del]	
		dd MMM yyyy
ntiretrovirals?	No ▼ [del]	
	No ▼ [del]	
		details..
	Yes ▼ [del]	
annabis, Cocaine, Ecstasy, LSD etc)	No ▼ [del]	
illness?	No ▼ [del]	
		details...
	M [del]	M / F
	Unknown ▼	
	Unknown ▼	
	103 [del]	Kg
		cm
	☐	
	☐	
	☑ [del]	
	☑ [del]	
	☐	
	☐	
	☐	
	☐	
	☐	
	☐	
	☐	
	☐	
	☐	

tart	End	Name	J	F	M	A	M	J
7 Sep 2005	ONGOING	**BACTRIM DS** (960MG) TAB	30	30	30	30	30	30
ake one tablet daily after food.								
7 Sep 2005	ONGOING	**STOCRIN** (600 mg) TAB	30	30	30	30	30	30
ake one tablet at night (at bedtime).								
7 Sep 2005	ONGOING	**COMBIVIR TABLETS** TAB	60	60	60	60	60	60
ake one tablet twice a day.								

REPLACE	DELETE	AUTHORISE	RE-AUTHORISE ALL

tigation

VL	Log value	HB	MCV	Leuco cytes	Neutophils	Platelets	Serum iron	Urea	Serum Creat	Creat Clear	ALT	AST
1000000	6	15.7	85.2	5.6	4.3	80		6.1	60		51	28
		15.8	84.1	4.0	2.3	55		4.1	75		47	35
68000	4.83	15.7	82.6	5.7	3.1	60		5.8	67		48	37
395000	5.59	14.9	82	5.3	2.4	73		4.5	71		50	38
= ▾												

		Due	Create
▾			
		27 Mar 2006	27 Sep
		27 Mar 2006	27 Sep
		27 Oct 2005	27 Sep
		06 Oct 2005	27 Sep

provided is the wrong one for this patient. letter sent.

, Stocrin + Bactrim DS as requested. F'up CD4 + VL in 6/12, FBC in 1/12 from start date. LFT f'up in 2 weeks (GGT + ALT both slightly raised). [eMailed to MRuzemvya@debswana.bw]

t local

t queue

FAX

Email

ted	Printed	User
005 09:38	20 Oct 2005 09:38	skono
005 11:15	27 Sep 2005 11:16	liezl
005 11:15	27 Sep 2005 11:16	liezl
005 11:15	27 Sep 2005 11:16	liezl
005 09:18	23 Sep 2005 09:19	mruzemvya
005 09:18	23 Sep 2005 09:19	mruzemvya

01 Nov 2005

YES - [payment processed!]

01 Nov 2005

Principal Doctor

0396362

1516418

Mouton

Johannes

MB ChB

(013) 764-2134

764-2293

0832262385

jmout@mweb.co.za

P O BOX 109

SABIE

1260

12 Oct 2005

False

Principal Support Group

SG: Mpumalanga

Sabie - Annah Mokynena

Mokynena

Annah

John Sargent

(013) 764-9216

s investigation

12 Oct 2005 ▼

12 Oct 2005   dd MMM yyyy

Sabie 3   ▼ [del]

3   [del]

12 Oct 2005   [del]

on 13 Oct 2005   [del]

14 Oct 2005   [del]

Yes ▼ [del]

Mashaba   [del]

Ernest   [del]

0735792216   [del]

			•	Viral load
Hearn, C		30 Jun 2005	•	CD4 count
Monadjem, M	0057003	07 Jun 2005	•	Viral load
Mnisi, A	1810766	30 Jun 2005	•	CD4 count
			•	Viral load
Ntiwane, T	0014037	27 Jun 2005	•	CD4 count
Mills, M	5808974	01 Jun 2005	•	Viral load
Dlamini, F	0014035	06 Jun 2005	•	CD4 count
			•	Viral load
Mnisi, A	1810766	30 Jun 2005	•	CD4 count
			•	Viral load
Mnisi, A	1810766	30 Jun 2005	•	CD4 count
			•	Viral load
Ntiwane, T	0014037	07 Jun 2005	•	CD4 count
			•	Viral load
Mathunjwa, L	14049	01 Jun 2005	•	CD4 count
			•	Viral load
Dekov, V	0014006	07 Jun 2005	•	CD4 count
			•	Viral load

tigation

	VL	Log value	HB	MCV	Leuco cytes	Neutophils	Platelets	Serum iron	Urea	Serum Creat	Creat Clear	ALT	AST
	= ▾												=

			Due	Create
▾				
			12 Apr 2006	01 Nov

| | 30 Nov 2005 | **Next contact** | 01 Nov 2006 | **This contact was** | ---select one--- ▾ |

essment cont.
- ommitted to treatment
- ines Collected

eds
- her medication
- tial drug interaction
- edicines
- al/traditional medicines

Other meds cont.
- ☐ Chronic medicines
- ☐ Immune boosters

Pregnant
- ☐ Patient pregnant

Problems
- ☐ No problems
- ☐ Side effects
- ☐ Taking medicines incorrectly

Problems cont.
- ☐ Forgetting/too busy to take treatment
- ☐ Alcohol/drug abuse
- ☐ Problems obtaining meds
- ☐ Funding problems
- ☐ Social Problems
- ☐ No support system

Problems cont.
- ☐ Hospitalized
- ☐ Too ill to talk
- ☐ Depression/Psychiatric problems

Plan
- ☐ No results outstanding
- ☐ Reminded of dates and sent followup lettera
- ☐ Advise patient to see doctor

Plan cont.
- ☐ Case referred to interventionists
- ☐ Discuss adherence
- ☐ Discuss benefits
- ☐ Discuss lifestyle
- ☐ Contact details confirmed
- ☐ Assigned next contact date

Archive this file: ☐

[SAVE] [CLEAR] [EMAIL]